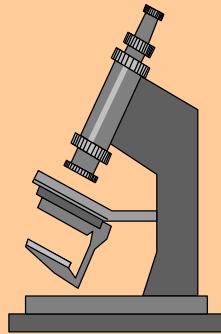


# Cytology Computer Image Proficiency Testing - An Alternative to Glass Slides



# CCIPT Team Members

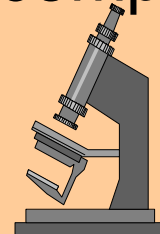
- Primary Team: MariBeth Gagnon, Roger Taylor, Jim Lange, Tommy Lee
- Contract Support: Nancy Gathany, Richard Draut, Ed Kujawski
- ISA Support: Bruce Bowden (NRC), Calvin Hightower
- Support: many DLS staff members

# Background - Need

- CLIA mandated glass slide PT - Feb 1992
- RFP for glass slide PT - Mar 1993
- Symposium: Cytology PT - Nov 1993
- Cooperative agreements - Jun 1994, Pilot Study - Apr 1995
- Contract to compare glass slide PT & computer PT to rescreen - Sep 1994 to Spring 1997
- CDC to develop CCIPT from NLM prototype

# Required Characteristics

- Computer monitor images must mimic microscope images
- Test locator and identification skills
- Good image quality
- Comparable to glass slide PT
- Ideally, use easily available computer platform



# Capture Setup - Overview



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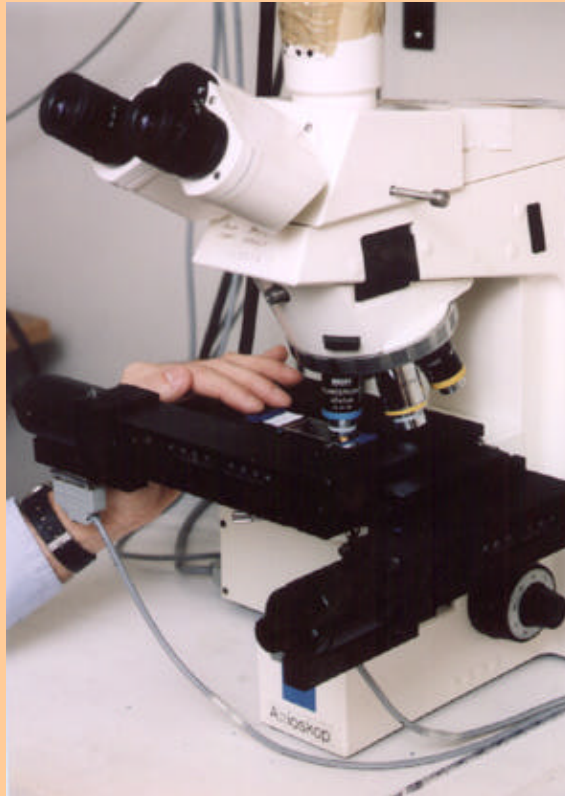
# Digital Camera



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# Capture Microscope



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# Capturing Images

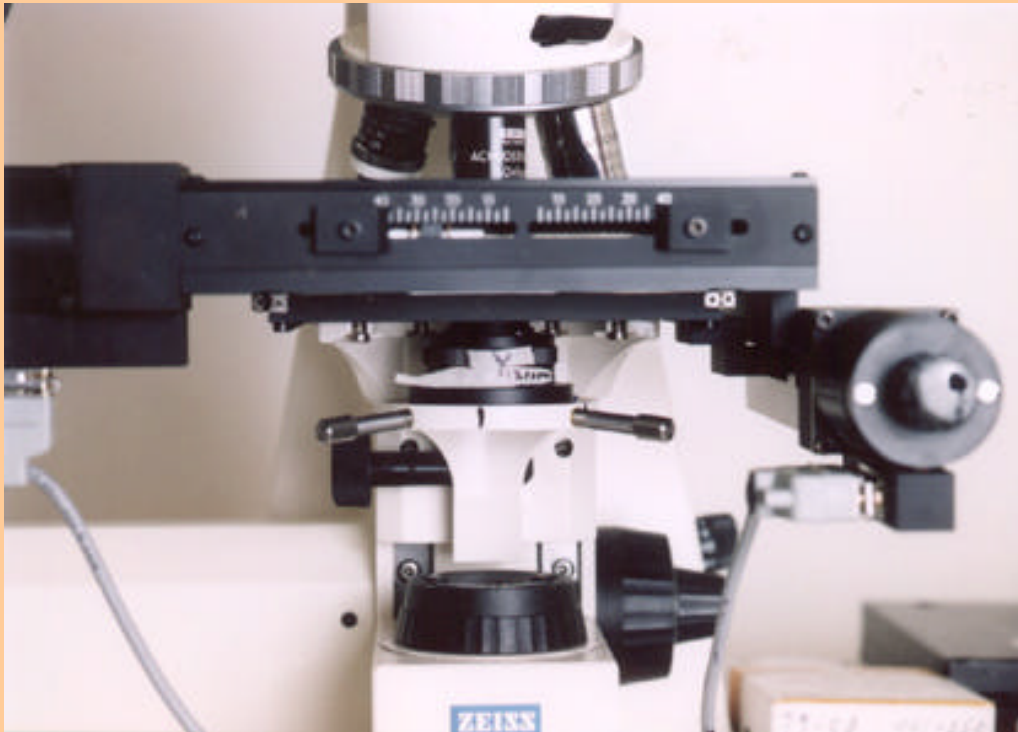


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# Close-up of Condenser and Stage Controller



# Testing Setup - Overview



# Server and Storage Setup



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# Testing Station

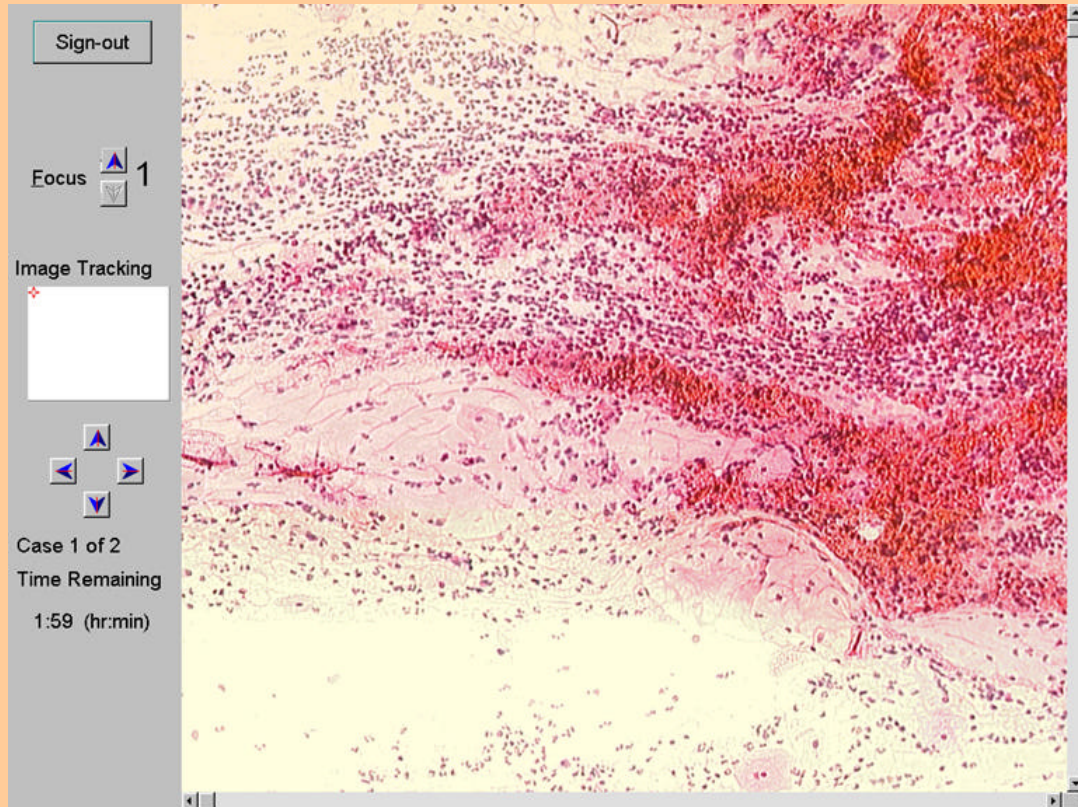


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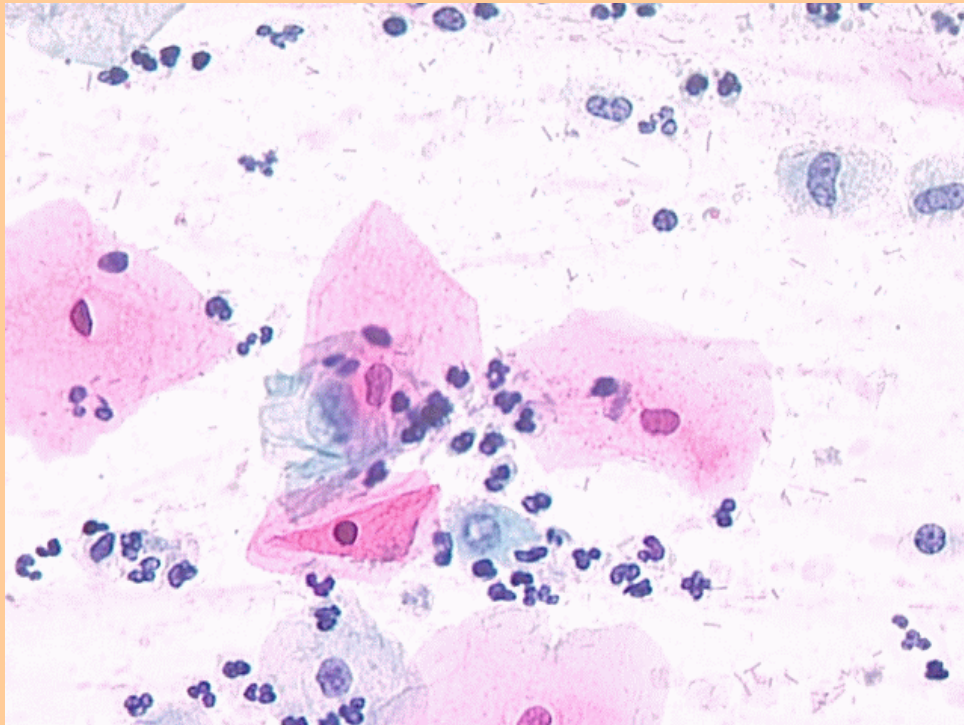
12

# User Interface

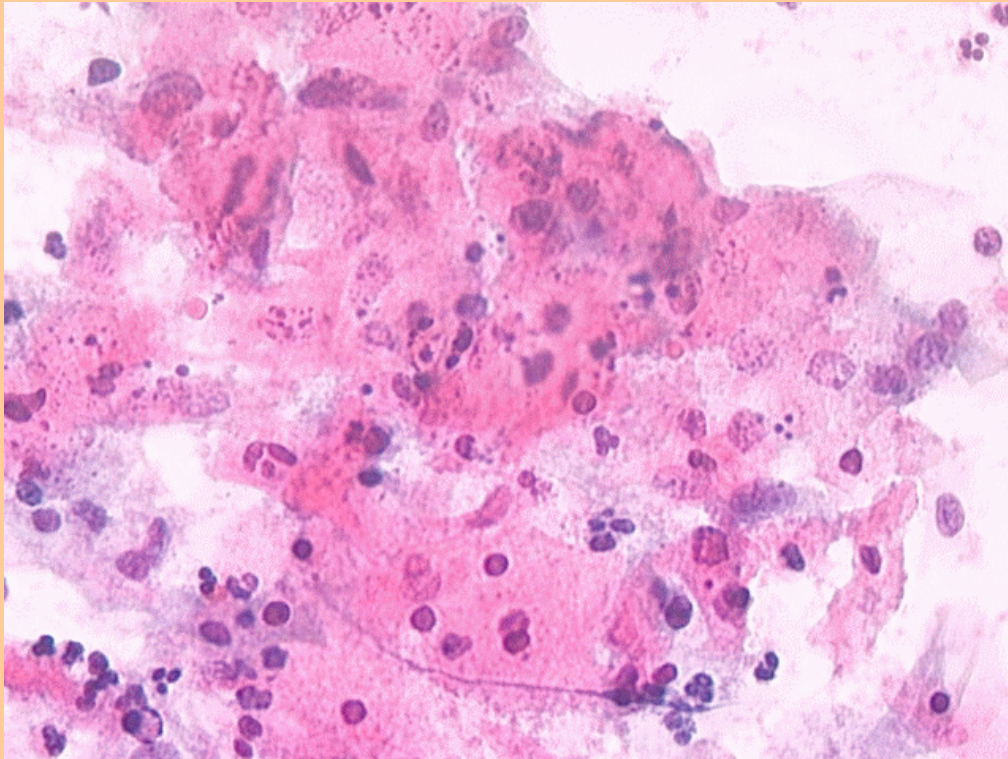




# Image - squamous epithelial cells from a slide WNL



# Image - HGSIL



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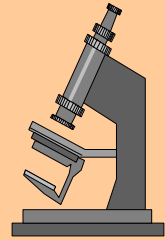
15

# Challenges

- Hardware/software compatibility & integration
- Platform change - Unix to PC, C to Delphi
- Expand capture area - 1x1 mm to 10x5 mm
- Image quality and size - optimized 8-bit
- Scan speed - load each image, read ahead
- Luminance gradient (tiling) - trial & error
- Stage imprecision - overlap, align, correlate
- Procurement of non-standard equipment



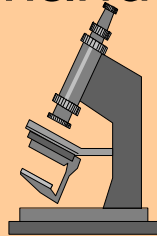
# Summary



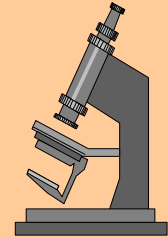
- To fill regulatory need - national PT
- Large dimensions
- Technology readily adaptable to other microscopic disciplines
- Great potential for training & education

# Plans

- Pilot test
- Compare to glass slide PT in contract-funded study - ASI
- Make available as viable alternative for congressionally mandated PT



# For More Information:



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- Jim Lange - (770) 488-4145 or [jvl1@cdc.gov](mailto:jvl1@cdc.gov)
- Tommy Lee - (770) 488-4586 or [tlj0@cdc.gov](mailto:tlj0@cdc.gov)